UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM:

To: Kable Bo Davis, PM03

From: Matthew Aubuchon, Ph.D., Entomologist

Secondary Review: Jennifer Saunders, Ph.D., Senior Biologist

Date: 4/3/2017

Subject: PRODUCT PERFORMANCE DATA EVALUATION RECORD (DER)

THIS DER DOES NOT CONTAIN CONFIDENTIAL BUSINESS INFORMATION

Note: MRIDs found to be **unacceptable** to support label claims should be removed from the data matrix.

DP barcode: 438455
Decision no.: Rereg
Submission no: Rereg
Action code: Rereg
Product Name: Deadpest
EPA Reg. No or File Symbol: 65987-3
Formulation Type: Aerosol
Ingredients statement from the label with PC codes included:
Phenothrin 2.00% PC: 069005

Application rate(s) of product and each active ingredient (lbs. or gallons/1000 square feet or per acre as appropriate; and g/m$_2$ or mg/cm$_2$ or mg/kg body weight as appropriate): Cans disperse a rate of 10 grams per 1000 ft^3 over period of 10 seconds. Rate as expressed is 1gram of spray / second.

Use Patterns: Indoor applications for residential sites and/or homes such as apartments, condominiums, garages, kitchens, boats, vans, tents, and pet sleeping areas. Commercial application sites include apartments, condominiums, warehouses, hotels, motels, schools, and kennels.

I. Action Requested: Reregistration efficacy review requested. MRIDs 47000402, 47697301, and 48250001 are listed on the data matrix for this product and are reviewed here to determine if efficacy claims against ants, fleas, ticks, spiders, mosquitoes, houseflies, gnats, centipedes, and cockroaches are supported.

II. Background: Product specific data were called in for phenothrin to support the reregistration of this product.

III. MRID SUMMARY

MRID 47000402 investigated the direct-spray efficacy of an experimental aerosol against the following insect pests: German cockroach, *Blatella germanica*; American cockroach, *Periplaneta americana*; house fly, *Musca domestica*; stable fly, *Stomoxys calcitrans*; cellar spider, *Pholcus phalangiodes*; and honey bee, *Apis mellifera*. Test Formula 83-023 aerosol with 1% D-phenothrin is relevant to the subject product 65987-3; other products in this study are not reviewed because they contained different active ingredients. Data for honey bees are not reviewed here.

MRID 47697301 investigated the knockdown efficacy of a fogger against cat fleas *Ctenocephalides felis*. Test product for MRID was Bengal Product 2007A (EPA Reg. No. 68543-35).

MRID 48250001 investigated the knockdown efficacy of a fogger two surface spray formulations *Aedes aegypti* mosquitoes. Formulations consisted of F-2188 (0.12% phenothrin) and OTI (2% pyrethrin). Results from OTI formulation were not reviewed here as the active ingredient is different from the active ingredient in the subject product 65987-3.

47000402. Cardoza, R. and R. Kirkland (2003) Evaluation of formula 119-064 and formula 83-023 in the control of the German cockroach, American cockroach, house fly, stable fly, cellar spider and honey bee.

(1) non-GLP

(2) **Methods:** This laboratory study was conducted to assess direct spray efficacy of experimental aerosol insecticides against the following pests: German cockroach, *Blatella germanica*; American cockroach, *Periplaneta americana*; house fly, *Musca domestica*; stable fly, *Stomoxys calcitrans*; cellar spider, *Pholcus phalangiodes*; and honey bee, *Apis mellifera*. Cockroaches and honey bees were from laboratory colonies, cellar spiders were field collected, and flies were purchased from a commercial insectary. Experimental insecticides were not product specific: 1) formula 119-064 aerosol consisted of 0.25% pyrethrum, 0.25% permethrin and 2% PBO, and 2) formula 83-023 aerosol with 1% D-phenothrin corresponds with the subject product 65987-3. Four replicates of 10 individuals each (n = 40) for the German roach, house fly, and stable fly; 4 replicates of 5 individuals each (n = 20) for the American roach and honey bee; 10 replicates of 1 individual each (n = 10) for the cellar spider were held in 32 oz deli cups (if crawling) or screen-lidded containers (if flying) and sprayed with ~ 1g of formulation per replicate, then immediately transferred to clean deli cups (if crawling). Flying insects were not removed from treated containers. An equal number of individuals and reps per species served as UTC. Mortality was recorded at 0.5, 1, 2, 3, 5, 10, 15, 30 and 60 minutes after application.

(3) **Results:**

TRT	Active Ingredients	Mean time (minutes) to 2:90% Mortality					
		GCR	***ACR***	***HF***	***SF***	***CS***	***HB***
83-023	1.0% d-Phenothrin	15	10	1	0.5	10	1
119-064	0.25% Pyrethrum 0.25% Permethrin 2.00% PBO	10	10	2	1	10	1

Table. Treatments applied and mortality observed as a result of direct contact spray of insects. (***GCR*** = German cockroach; ***ACR*** = American cockroach; ***HF*** = house fly; ***SF*** = stable fly; ***CS*** = cellar spider; ***HB***

= honey bee). No mortality occurred in controls.

(4) **Conclusion:** This MRID is **partially acceptable** to support a direct spray kills claim for each of the experimental insecticides tested against German cockroaches and spiders (excluding black widow and brown recluse).

For house flies and stable flies (i.e., flying insects), the rate of application of the experimental formulation applied as 1 g in the volume of a 32 oz cup, does not equate to the label rate for Deadpest applied for 1-3 sec upward spray/1000 ft^3 to mimic a fogger. If a 1 sec spray is ~ 1 g of product, then the rate applied in the 32 oz cup greatly exceeds the label rate when used as a spatial spray. The rate did kill house flies and stable flies through direct contact only, therefore efficacy claims for direct contact are supported.

Lastly, the number of individuals for the American cockroach was unacceptable low. Tests should be conducted with five replicates of at least 10 individuals. Departures from this should be justified in the submitted study.

47697301. An Evaluation of the Efficacy of a Total Release Aerosol (Fogger) against Cat Fleas

(1) non-GLP

(2) **Methods:** Ten adult cat fleas (*Ctenocephalides felis*) were placed in a plastic five-gallon arena. Four (4) replicate arenas were designated for fogger tests; four (4) arenas were designated as untreated controls for each treatment. Arenas consisted of 18-gal tubs (19.25"L x 16.25"W x 16"H) lined with carpeting. All arenas were placed symmetrically around a partitioned test chamber measuring 8' x 15' (6000 ft^3). Total volume of treated space was 3000 ft^3 within partition. Three separate treatments were conducted. Test arenas were removed from the treatment chambers after 4 hours. Insects remained within test arenas for duration of data collection. Product was discharged at a height of 30" above the floor for an average of 1 minute, 20 seconds and dispensed an average of 76.46 grams of material. Insects were left in treatment chamber for a period of four hours, then transported to a separate untreated laboratory. All insects remained in their original containers throughout the study. Percent (%) mortality was calculated after 4, 24, and 48 hrs post treatment.

(3) **Results:** Flea mortality was 0% after four hours, then <1% after 24 hrs post treatment. The 48-hr count however resulted in an average of 93.7% flea mortality. No control mortality was observed.

(4) **Conclusion:** This study does not support claims against fleas.

MRID 47697301: This study is un**acceptable** and should be removed from the data matrix for product 65987-3. The label of subject product Deadpest states that aerosol cans disperse a rate of 10 grams per 1000 ft^3 over period of 10 seconds. The amount of product dispersed from the tested aerosol total-release fogger was 76.46 grams of material for 6000 ft^3, or 12.743 grams of material for 1000 ft^3. The test product therefore exceeds the rate that would be dispersed from the subject product. In addition, the reviewer has no way of determining the rate of surface deposition between the test product (aerosol fogger) versus the subject product (direct spray). Finally, fleas were not transferred to clean containers after application and were therefore exposed to the residue for the duration of the test, which is unrealistic in a real-world scenario.

48250001. Product Performance/Efficacy Report – Liquid Efficacy – Mosquitoes

(1) non-GLP

(2) Methods: Twenty (20) adult *Aedes aegypti* mosquitoes were placed in a half-pint cylindrical cartons affixed with window screen on terminal ends. Cartons were suspended 12" from the ceiling of a Peet-Grady chamber. A dosage totaling 12 ml of formulation F-2188 (0.12% phenothrin) was delivered through two (2) side ports. Mosquitoes were confined in their containers for 10-minutes inside the sealed chamber. After 10 minutes, insects were transferred to clean recovery dishes, supplied with sugar-water soaked pads, and held for 24-hr mortality counts. A total of four replicates were conducted.

(3) Results: One hundred percent (100%) mortality was reported at 24 hrs.

(4) Conclusions: This study does not support mosquito claims for product 65987-3.

MRID 48520001: This study is classified as **unacceptable** and should be removed from the data matrix for 64987-3. The size, and volume of the Peet-Grady chamber was not disclosed. Therefore, the reviewer could not determine if the delivered dose of test product F-2188 was comparable to the dose dispersed by 65987-3. More importantly, only one genus (*Aedes*) of mosquito was tested. Additional tests with *Culex* sp. and *Anopheles* sp. should be conducted to support mosquito claims for a product.

IV. EXECUTIVE SUMMARY

MRID 47000402: This MRID is **partially acceptable** to support a direct spray kills claim for each of the experimental insecticides tested against German cockroaches and spiders (excluding black widow and brown recluse).For house flies and stable flies (i.e., flying insects), the rate of application of the experimental formulation applied as 1 g in the volume of a 32 oz cup, does not equate to the label rate for Deadpest when used as a spatial spray. The rate did kill house flies and stable flies through direct contact only, therefore efficacy claims for direct contact are supported. Lastly, the number of individuals for the American cockroach was unacceptable low. Departures from this should be justified in the submitted study.

MRID 47697301: This study is **unacceptable** and should be removed from the data matrix for product 65987-3. The label of subject product Deadpest states that aerosol cans disperse a rate of 10 grams per 1000 ft^3 over period of 10 seconds. The amount of product dispersed from the tested aerosol total release fogger was 76.46 grams of material for 6000 ft^3, or 12.743 grams of material for 1000 ft^3. The test product therefore exceeded the rate that would be dispersed from the subject product. In addition, the reviewer has no way of determining the rate of surface deposition between the test product (aerosol fogger) versus the subject product (direct spray).

MRID 48520001: This study is classified as **unacceptable** and should be removed from the data matrix for 65987-3. The size, and volume of the Peet-Grady chamber was not disclosed. Therefore, the reviewer could not determine if the delivered dose of F-2188 was comparable to the dose dispersed by 65987-3 applied as an aerosol fogger. Most importantly, only one genus of mosquito was tested. Additional tests with *Culex* sp. and *Anopheles* sp. must be conducted to support mosquito claims for a product.

V. LABEL RECOMMENDATIONS

(1) Make the following changes to the Directions for Use:

- Delete directions for use against ticks, centipedes, mosquitoes, gnats, and bees.
- Remove directions for use of Deadpest as a spatial spray against house flies and stable flies and instead indicate that these pests must be directly contacted by the product.
- Change references to "cockroaches" to read "German cockroaches"
- Change references to "spiders" to read "spiders (excluding brown recluse and black widow)"
- Change references to "ants" to read "ants (excluding fire, pharaoh, harvester, and carpenter)"

(2) The following marketing claims are acceptable:

- Kills claims against German roaches, ants and spiders – provided that a qualifying statement excluding brown recluse and black widow spiders is added to spider claims and a qualifying statement excluding fire, pharaoh, harvester, and carpenter is added to ant claims
- Kills claims against house flies and stable flies – provided that claim is qualified stating that house and stable flies must be sprayed directly.
- Kills claims against sowbugs, silverfish, and firebrats

(3) The following marketing claims are unacceptable:

- All marketing claims against American roaches, ticks, mosquitoes, flies, gnats, and bees are unacceptable.
- Delete flushing claims – there are no data within cited MRIDs that support flushing

(4) The following MRIDs should be removed from the data matrix, as they are classified as "**unacceptable**" to support the product: 47697301, 48520001.

(5) Make other comments/recommendations as appropriate:

No data to support ticks, gnats, and centipedes were included in MRIDs. The registrant lists honey bees (*Apis mellifera*) on the label as a pest. The reviewer strongly suggests removing pollinators from pest list on these kinds of products. MRID 47000402 identifies honey bees as representative of stinging hymenoptera (wasps, bees, hornets) on page 7 of the original study; however, actual wasps, hornets, and/or yellow jackets should be used in efficacy studies to support claims against these organisms.